CEO Gender Effect on Market Perception and Company Performance

Honors Undergraduate Thesis

Presented in Partial Fulfillment of the Requirements for the Degree with Honors Research Distinction in Finance in the Fisher College of Business of The Ohio State University

By
Annie Gu

The Ohio State University

2017

Thesis Committee:

Justin Birru, Advisor
Patricia West

ABSTRACT

As of 2016, women hold 4.2% of CEO positions at S&P 500 companies. This underrepresentation indicates that a barrier still exists for women in leadership. However, several female CEOs have paved the way for further advancements, which led me to wonder: How does the gender of CEOs affect company performance? This question will be examined in two ways: (1) by looking at the initial stock market reaction; and (2) by examining the stock market performance during the time of her tenure. The sample of firms includes around 100 women CEOs that have held office from 2000 to present for public companies that trade on the NYSE, NASDAQ, or American Stock Exchange. Stock returns for the day before, day of and day after the announcement date of a new, female CEO were examined. This measurement shows the change in a stock's value and reflects the market's initial reaction to the announcement. Based on the results gathered, there is a slight negative return of -0.51% which indicates that the market was pessimistic about the company performance during the announcement time. This value, however, is not significant enough to draw the conclusion that gender has an effect. Further analysis will be conducted to see effects in other dimensions such as return on assets, leverage, book to market value of the companies. These measurements will reflect additional ways of how the market is valuing the company as well as the actual performance during the time of a female CEO. If the results also reflect that there is no effect based on gender, the question raised is why there is a lack of female CEOs.

ACKNOWLEDGEMENTS

I would like to sincerely thank my research committee, Dr. Justin Birru and Dean Patricia West, for their continuous support and guidance throughout this entire research process. The time and effort you've spent working with me has not gone unnoticed. Your feedback and insights are greatly appreciated, and my thesis would not be the same without your inputs.

VITA

May 2013……William Mason High School

May 2017……...B.S.B.A Finance, Max M. Fisher College of Business, The Ohio State University

September 2017…….Incoming Consulting Analyst at Accenture

Field of Study

Major Field: Business Administration

Finance Specialization

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INTRODUCTION

Women are becoming more prevalent in the workforce and they are playing a significant role in leadership positions across companies. More firms are beginning to join the bandwagon of introducing programs and workshops that promote diversity and gender equality. Ken Favaro, Strategy& Senior Partner and global lead for its Enterprise Strategy group states that "this trend will only continue to grow . . . and companies need to plan how they will seek out and prepare their future women CEOs for leadership". According to Fortune Magazine's analysis of data from Factset Research Systems, on average, female CEOs at the country's biggest companies oversee financial results that beat the stock market.

Due to the attention that women are receiving and the success they are bringing to the corporate world, this fueled the idea of my research to further examine gender effect on company performance. However, attitude towards female leadership was not always this way. In the late 1980s, the term "glass ceiling" was referred to an invisible barrier that kept women and minorities from achieving corporate leadership mainly due to bias rather than skill and experience (Newell). Over the past 30 years, the attitude towards gender role has shifted dramatically. According to Strategy&, by 2040, women will make up a third of new CEO appointments. Based off of their 10-year data trend, more women will have higher education levels and entry of women into the business workforce will change "social norms of corporate leadership around the world" (Strategy&).

HYPOTHESIS/PREDICTIONS

In this research paper the primary question is determining whether company performance is effected by or differs due to female and male CEOs. This will be examined by looking at the

markets initial perception when the transition occurred and the actual stock performance during her time in tenure. Specifically I will focus my study on women CEOs that have held office from 2000 to present for public companies that trade on the New York Stock Exchange (NYSE), NASDAQ or American Stock Exchange. As of January 2017, women currently hold 29 CEO positions at S&P 500, which is only 5.8%. O f these companies include, Yahoo Inc., International Business Machines (IBM) Corp., General Motors Co., Duke Energy Corp., and Hewlett-Packard (HP) Enterprise. In addition to the main question, this paper will also address how attitudes towards financial risk between male and female CEOs impact overall company performance.

As previously discussed, it is arguable to say there is still "glass ceilings" for promotion of leadership positions for women. My hypothesis is if this is true, then women who have broken that barrier by being promoted to high positions like CEO over male should reflect their highly qualified skills and translate to an overall stronger performance.

THEORETICAL BACKGROUND

The relationship between gender and company performance is a relatively new study that is being further researched. Krishnan and Parsons (2008) found that firms who had more gender diversity in their senior management level resulted in higher earnings quality. Other research done by Ernhard, Werbel and Shrader (2003) and Welbourne (1992) also support the idea that women in top management teams results in higher earnings to increase profitability of firm performance.

The study between gender and risk aversion levels is also an area of interest. Vandergrift and Brown (2005) and Wei (2007) supported the theory that women are more risk averse than

men. This differential risk attitude between males and females reflect how they handle corporate financial decisions. However, according to Schuber et all (2000), if women were placed in an environment where investment decision are secure and less ambiguous, they usually take the same risk as men. Unfortunately, the market does reflect uncertainty so the behavior between male and female when it comes to investing is different.

LITERATURE REVIEW/PRIOR RESEARCH

Research conducted by Strelcova (2004) measured company performance as abnormal buy-and-hold stock returns during the time where the company appointed a new female CEO. Each company from the female CEO sample is paired with a company from the male CEO sample that have the same 2 digit SIC code which is used to identify a firm's primary business activity. These pairs are then matched by sales and market capitalization to ensure similar comparison across companies. To measure the proximity, the author used these variables:

$$Z^* = (Z_{SALES}\,(female) - Z_{SALES}(male))^2 + (Z_{CAP}(female) - Z_{CAP}(male))^2$$

Where Z_{SALES} and Z_{CAP} is the number of standard deviations from the sample average of sales and market capitalization.

Strelcova studied companies listed on the AMEX, NYSE, and NASDAQ, which resulted in a sample of 84 female CEOS. To see if company returns from female CEO and male CEO were significantly different, she performed a two-sided t-test for mean of return differentials and Wilcoxon test for the median of return differentials. The table below was the results:

Year Relative to the Female CEO Appointment Date (t)	Female Sample		Male Sample		Differentials			
	Mean	Median	Mean	Median	Mean	P-value	Median	P-value
t-3	20.67%	7.80%	14.71%	10.00%	5.96%	0.703	-1.80%	0.799
t-2	19.36%	1.10%	14.42%	5.70%	4.94%	0.811	-6.50%	0.512
t-1	17.73%	4.70%	29.81%	18.80%	-12.07%	0.312	-12.00%	0.247
t	1.15%	1.10%	26.70%	21.60%	-25.55%	0.010	-21.00%	0.013
t+1	32.22%	16.60%	15.82%	9.10%	16.40%	0.259	6.90%	0.398
t+2	26.20%	20.20%	8.92%	9.00%	17.28%	0.100	11.00%	0.148

Table 2. The Test of Annual Return Differentials

The test shows that stocks of companies run by female CEOs under-perform the stocks of companies run by male CEOs by over 20%, given a one-year period of the female CEO being newly appointed. However, years after the appointment date, companies run by female CEOs tend to outperform companies run by male CEOs. For example, after a year of the announcement date, male CEOs led companies that had an annual return of 15.82%. Companies run by female CEOs had a 32.22% annual return, which is roughly double the return of males. This indicates that over time, female CEOs have the ability to improve company performance and even outperform male CEOs.

Another research done by Rick Meijer examined the effects of CEO gender on firm performance and stock valuation in the short term and long term. He specifically focused on the abnormal stock returns and collected his sample from Fortune 1000. To calculate returns, Meijer used the value weighted 5-industry portfolios from Fama-French's Center for Research in Security Prices (CRSP). In the short run, Meijer concluded that investors believe female CEOs are less capable, which are shown by the stock return. He tested cumulative average abnormal returns (CAAR) of stock portfolios and insiders CAAR surrounding the event of a new announced CEO is significantly negative. This means that investors probably expected announcements to contain poor information.

However, in the long term, he concluded that since the alpha for zero investment portfolio of the arbitrage portfolio is positive and significant, then the stocks from all companies run by female CEOs outperform the industry index and therefore, male led firms. He looked into all female risk factors and found a positive alpha, which means that the fund performed better

than its beta would have predicted. Although beta was higher this shows that female CEOs bear more risk when it comes to company returns.

METHODOLOY

Data Collection

In my analysis, the sample of firms that were collected includes 96 women that have held office from 2000 to present for publicly traded companies. Information on stock returns, which is used to measure the initial market reaction, is only provided for companies that are public. Thus this sample could not include privately held companies, which several of those CEOs are female. However, this sample size is still large and diverse enough to show the effects a change in gender a CEO has on a company. Two main data sources were used to obtain the sample: (1) Execucomp offered a list of female CEOs in a given year based on start and exist dates; (2) Yahoo Finance provided stock returns of each company and the market returns (S&P500) respective to a given date.

A snapshot of the companies that were analyzed is listed below, including the names of the women CEO, those currently in the position, and most importantly, the announcement date of the shift to a female CEO.

	Company	Ticker	Name	Announcement Date
1	Ventas	VTR	Debra Cafaro	9-Mar-99
2	Mondelez International	MDLZ	Irene Rosenfeld	26-Jun-06
3	Pepsico	PEP	Indra Nooyi	14-Aug-06
4	The TJX Companies, Inc.	TJX	Carol Meyrowitz	7-Sep-06
5	Xerox	XRX	Anne Mulcahy	26-Jul-01
6	Campell Soup	CPB	Denise Morrison	23-Jun-11
7	KeyCorp	KEY	Beth Mooney	18-Nov-10
8	Sempra Energy	SRE	Debra Reed	27-Jun-11
9	TEGNA	TGNA	Garcia Martore	6-Oct-11

10	Alliant Energy	LNT	Patricia Kampling	20-Jan-12
11	IBM	IBM	Virginia Romnetty	25-Sep-12
12	Mylan	MYL	Heather Bresch	26-Oct-11
13	Yahoo!	YHOO	Carol Bartz	13-Jan-09
14	Yahoo!	YHOO	Marissa Mayer	16-Jul-12
15	Duke Energy	DUK	Lynn Good	18-Jun-13
16	General Dynamics	GD	Phebe Novakovic	7-Jun-12
17	HCP, Inc.	HCP	Laualee Martin	3-Oct-13
18	Lockheed Martin	LMT	Marillyn Hewson	9-Nov-12
19	ULTA	ULTA	Mary Dillon	24-Jun-13
20	General Motors	GM	Mary Barra	10-Dec-13

Metrics

In order to measure the initial market reaction, a company's stock return is used. This measures the gain or loss of a stock's value based on a given period. The total stock return is usually calculated by taking the appreciation in stock price plus any dividends over the initial stock price. This return reflects the market's expectation of future cash flows for a certain company. The metric accounts for market and firm specific changes so the values will reflect the implications a change in CEO has on a company.

In order to understand the effects of CEO gender in other dimensions, other variables are collected such as market to book, leverage, and return on assets (ROA). The market to book value measures if a company is over or undervalued by comparing the book value – which is determined by the company's balance sheet, and the market value – which is determined in the stock market through its market capitalization. This ratio measures if the company is over or undervalued by providing insight on the market's perception. Leverage shows the capital structure of a company and reflects the amount of debt it takes on. It is equal to total debt over the market value of the firm. Return on assets (ROA) shows how profitable a company is, relative to its total assets, thus reflecting the actual performance of a given company. This metric

will address how the CEO actually performed during the time of her tenure and see how it compares with the markets initial reaction. These market evaluations provide another perspective on how CEO of gender effects company performance.

Other metrics were also considered to measure company performance such as expected return and return on equity (ROE). To evaluate the expected return of a company, there are various pricing models including the Capital Asset Pricing Model (CAPM) and multifactor models (arbitrage pricing theory models). The CAPM model shows the relationship between risk and return that characterizes a security's expected return based on its beta with the market portfolio. This model will represent a holistic view of the company and accounts for market risk to give a good estimate of expected return. In a multifactor model, the expected return is calculated entirely to factor loading and factor premia, so specific factors that affect a company can be tailored to the calculation. This may be a good model to consider as well because the calculation of expected return can reflect the change in executive roles within a corporation. However, in this research, the CAPM pricing model using company stock returns will be the focus of the analysis.

Methods

As previously stated, a method to see if gender has an effect on company performance is to analyze a company's stock returns. Specifically looking at the day before, day of, and day after the announcement date when the transition of a new CEO takes place. By considering the total return within the 3-day time frame, this will show the reflected percentage of increase or decrease in future profit. This measurement will measure the initial market reaction of the change in CEO. To ensure that the return only reflects the attitude the market has on the change in CEO, the market return is subtracted from the company's stock return. A cumulative abnormal

return (CAR) is then calculated by taking the average of these adjusted returns based on the 3 dates. This value, given the time frame of the announcement date, shows the investors initial perception of how this change of CEO will affect the market. If the percent of stock returns increases, then this indicates that the shift in leadership is believed to have a positive impact on the company.

Below is a snapshot of the data that was collected for each company:

Company	Date	Price	Return	S&P 500	S&P 500 Market	Adjusted Return	Cumulative Abnormal Return
IBM	21-Sep-12	205.98		1460.15			**0.88%**
	24-Sep-12	205.29	-0.33%	1456.89	-0.22%	-0.11%	
	25-Sep-12	204.98	-0.15%	1441.59	-1.05%	0.90%	
	26-Sep-12	204.00	-0.48%	1433.32	-0.57%	0.10%	

Note: Stock return – S&P 500 market = Adjusted return
Cumulative Abnormal Return = Average of adjusted returns

However, implications do need to be considered as to what the changes in future profit means. It can be assumed that a positive percent change reflects an optimistic view on the change in CEO. However, other factors such as the point in time when the change occurred or industry specific factors could also be a reason.

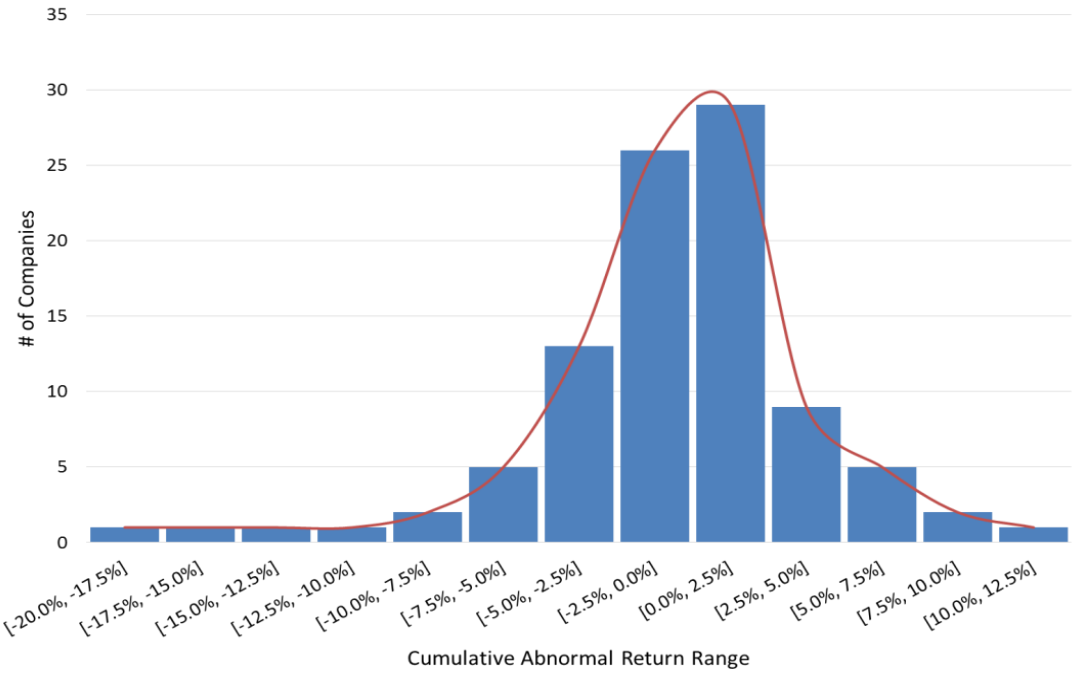
RESULTS/FINDINGS

Initial Market Reaction

To reiterate, the primary research question is to evaluate whether company performance is affected by female and male CEOs. From an initial market reaction, women CEOs performances tend to be viewed more pessimistically, despite leading comparable companies as

their male counterparts. The average cumulative abnormal return (CAR) for all 96 companies with female CEOs is -0.51%. This indicates that the market was pessimistic about the transition once the announcement was made about a new CEO. The median cumulative abnormal return is -0.32%. This shows that the abnormal returns was not skewed by an overly positive or negative return, thus supporting the calculated average CAR.

Below is a distribution graph illustrating the average cumulative abnormal returns based on stock returns of each company:



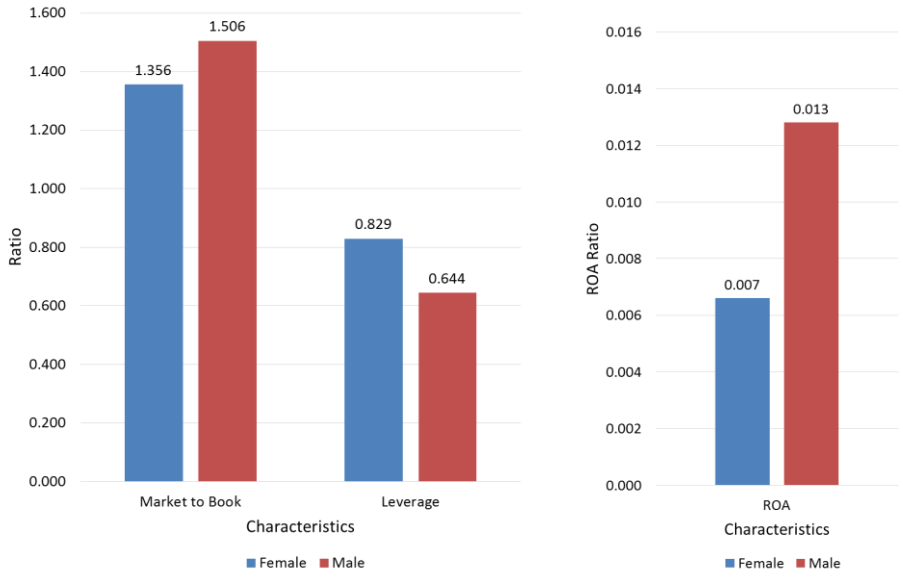
To see if -0.51% is statistically significant based on the collected sample, a test of statistical significance was conducted. Based on a 5% significance level, the p- value is 0.297 which is greater than 0.05, thus this value is not statistically significant – we cannot conclude that it is not 0, meaning there is no effect of CEO gender on company performance. This could be due to the small sample size. However, from a financial perspective, a -0.51% return is

considered relatively large for an abnormal return; especially in a 3 day period, based on the factor of a CEO gender.

Additional Market Evaluation

Apart from examining the initial market reaction, measured by stock returns, additional market variables were analyzed to understand the effects of CEO gender in other dimensions – specially, market to book, leverage, and return on assets (ROA). 'To reiterate, the market to book ratio is another measure of valuation, indicating whether the market over or undervalued a company. Leverage reflects a firm's capital structure and shows the amount of debt a company is willing to take on. It is equal to total debt over the market value of the firm. The return on assets is an indicator of how profitable a company is relative to its total assets. This measurement reflects the actual performance of a company. In order to understand the firm size and the total market value of equity for the firm, market capitalization is also collected in the analysis to see the differences.

Given the data of both male and female CEOs of publicly traded companies up to 2012, varying differences between genders of CEOs are shown. Below shows the market variables based on company performance:



In general, female CEOs led companies of higher market capitalization than male CEOs. The market capitalization for females was $7.6 million and $7.3 million for male. The market had a higher valuation for companies with male CEOs. The market to book value for female was 1.356, however, for males it was 1.506. For leverage, the ratio for male was 0.644 and 0.829 for female; therefore companies with female CEOs have more leverage than companies with male CEOs. This observation is contrary to previously conducted research, which states that women are more risk averse than male. However, this may be due to the ambiguity of investment decisions or company preferences in terms of leadership. Lastly, the return on assets for male was 0.013 and 0.007 for female. This means companies with male CEOs have higher return on assets, thus higher profitability than female CEOs. This supports the markets initial reaction that female CEOs perform worse than male CEOs.

DISCUSSION

Insights/Recommendations

Based on the calculated findings, specifically return on assets (ROA), male CEOs tend to have stronger performance than female CEOs during the time of their tenure. Given the results of stock returns and market to book value for the companies, this matches the market's initial pessimistic reaction to the announcement of a female CEO. However, other differences in company performance may be due to various industries across gender and unsystematic risks within a specific industry.

From a statistical standpoint, -0.51% cumulative abnormal return is not significant enough to draw the conclusion that gender has an effect on company performance. Since this is the case, more females should be considered for executive roles. If this trend becomes more

prevalent in the workforce, firms should plan on how to seek out and develop their women workers in leadership.

LIMITATIONS

Due to the limited number of female CEOs, the sample size is rather small. Since female CEOS are not as common as male, the data collected only represents a portion of the effect gender could have on the performance of a company. This also limits the comparison between how the market reacts to varying genders – most transition of CEOs are from male to female, rather than female to male. Various external variables such as industry specific factors also made it difficult to control only the single variable of CEO gender. Additionally, with some of the market variables such as leverage and market to book, these ratios are usually measured quarterly or annually, depending on the company. This is less frequent than stock returns which are recorded daily. As a result, it is difficult for these variables to reflect only gender differences, considering other external factors could have influenced the variables in the given time frame. However, it is assumed that the variables are significant enough to make a comparison across genders of CEOs.

FURTHER RESEARCH

Upon this research, other areas could be considered for further analysis. Rather than simply looking at the day before, day of, and day after the announcement date, another approach is to look at the stock returns 6 months prior and after. This will reflect a stronger correlation of the markets expectation over a period of time, showing how investors view the transition of CEOs.

Additionally, more research can also be conducted by looking at companies outside of the US such as Europe and Asia. Possible data to look into is *Amadeu Top 250,000 (Amadeus),* which is a *Bureau Van Dijk*. This database provides the name of CEO and ownership data for every private and public company in Europe that satisfies minimum size threshold. It would be interesting to see how various companies around the world are affected by CEO gender. If there were discrepancies, a possible explanation would be cultural norms and expectations.

Lastly, it would be beneficial to compare the stock returns based on specific industries of the companies. For example, male CEOs that lead companies in the financial industries could have stronger performance than females. Is there a correlation of stock returns based on an industry? If so, what industries do females or males dominate in, that yields higher returns? These questions would further the understanding of the impact gender of CEOs have on company performance.

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